Abstract submitted to Spring AGU Meeting

AGU Reference number: 2456 PIN: 7118
Currently in Hydrology

Surface Studies with the Multiangle Imaging SpectroRadiometer on EOS-Terra: First Results

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The Multi-angle Imaging SpectroRadiometer (MISR) instrument was launched aboard the Terra spacecraft on December 18, 1999. After an initial checkout phase, the instrument cover was opened on February 24, 2000 and collection of Earth imagery began. MISR contains nine cameras pointed at fixed along-track directions, and acquires images with view angles at the Earth's surface ranging from 70.5 degrees forward of nadir to 70.5 degrees aftward. Each camera contains four CCD line arrays filtered to blue, green, red, and near-infrared wavelengths, and spatial sampling ranging from 275 m to 1.1 km is obtained over a 400-km swath width. An on-board calibration system consisting of deployable Spectralon panels and a monitoring system of stable photodiodes is used to maintain high radiometric accuracy. Early results on MISR surface science are usually centered within selected areas where corroborating ground-based measurements are available. These ground-based measurements also allow a verifcation of the MISR atmospheric correction process, used to determine the surface-leaving radiances at the MISR view angles. The surface science products being generated include spectral directional reflectances, land spectral and short-wave albedos, and vegetation canopy parameters such as leaf area index and fPAR. Comparisons of some of these MISR products to currently available values will be presented.